

## CLAIMS:

1. A method for operating an autonomous vehicle at an airport, comprising the steps of:
  - 5 (a) - providing (18) a first set of navigation signals for general purpose use;
  - (b) - providing (26) a second set of navigation signals (28), being supplementary to the first navigation signals, for guiding aircraft to land at the airport;
  - characterised in that the method further comprises the steps of:
    - (c) – receiving (400), in the vehicle, the first set of navigation signals;
    - 10 (d) – receiving (402), in the vehicle, the second set of navigation signals;
    - (e) - receiving (304; 404) constraint data representing a permitted area of operation;
    - (f) - calculating (406; 310) a present position of the vehicle;
    - (g) - comparing (312) the calculated present position of the vehicle with the constraint data, thereby to determine whether the vehicle's present position lies within the permitted
    - 15 area; and
    - (h) - producing a signal (313; 315) indicative of the result of said comparing step; and
    - (i) – operating the vehicle in accordance with a predefined strategy (314) in response to the status of the signal (313; 315) of step (h).
- 20 2. A method according to claim 1 wherein the steps (f), (g) and (h) are also performed within the vehicle.
3. A method according to any preceding claim wherein the first set of navigation signals comprises signals emitted by a satellite navigation system (18).
- 25 4. A method according to any preceding claim wherein the second set of navigation signals comprises signals emitted by an augmentation system (26) for navigation for commercial air transport.
- 30 5. A method according to claim 4 wherein the second set of navigation signals comprises signals sent by a ground-based augmentation system (GBAS).

6. A method according to claim 4 or claim 5 wherein the second set of navigation signals comprises a set of signals issued at a fixed period, and wherein the vehicle monitors the arrival of these periodic signals and emits an alarm signal if the periodic signal is not received within a predetermined delay.
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7. A method according to claim 6 wherein, in response to the alarm signal, the vehicle proceeds to a predetermined muster station, which may be the current location of that vehicle
- 10 8. A method according to any preceding claim, wherein, in response to the comparing step indicating that the vehicle lies outside of the permitted area, generating an alarm (313) to an operator (300).
9. A method according to claim 8 further comprising the step of enabling the operator  
15 (300) to remotely control the vehicle, thereby moving the vehicle into its permitted area.
10. A method according to any preceding claim, wherein, in response to the comparing step indicating that the vehicle lies outside of the permitted area, automatically calculating a route from the vehicle's present position to the permitted area; and controlling the vehicle  
20 to proceed to the permitted area.
11. A method according to any preceding claim, wherein, in response to the comparing step indicating that the vehicle lies outside of the permitted area, controlling the vehicle to proceed to a predetermined muster station.
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12. A method according to any preceding claim further comprising the step of issuing a muster signal to the vehicle, receiving said muster signal in the vehicle, and controlling the vehicle to proceed to a muster station.
- 30 13. A method according to claim 12 wherein the muster signal comprises a signal redefining the permitted area to include only the muster station.
14. An autonomous vehicle for use at an airport, comprising:

- electrical and mechanical subsystems (414) to enable the vehicle to move and to perform an allotted function;
  - a traction control subsystem (412) for controlling the electrical and mechanical subsystems to operate the vehicle in a required manner;
- 5 - a path management system (410) for calculating a required path for the motion of the vehicle to follow;
- a navigation processor (406) for calculating a present position of the vehicle;
  - a constraint store for storing constraint data indicating a permitted area of operation;
  - a comparator for comparing the constraint data with the present position;
- 10 - a first navigation receiver (400) for receiving a first set of navigation signals, being general purpose navigation signals;
- an operator interface (404) for communicating with an operator; and
  - a second navigation receiver (402) for receiving a second set of navigation signals, being supplementary to the first navigation signals, for guiding aircraft to land at the airport.

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15. An autonomous vehicle substantially as described and/or as illustrated in Figs. 2-3 of the accompanying drawings.

16. A method for operating an autonomous vehicle at an airport, substantially as  
20 described, or as illustrated in Fig. 2 of the accompanying drawings.